

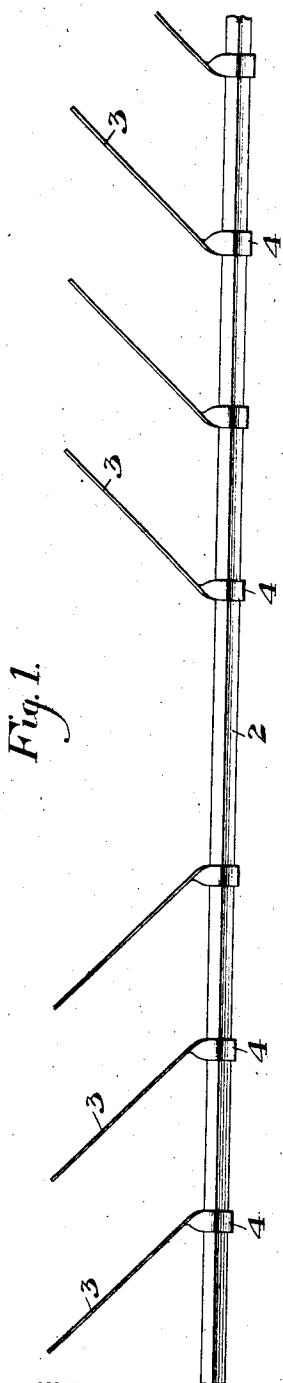
No. 826,375.

PATENTED JULY 17, 1906.

J. SNOWBALL.

METAL REINFORCEMENT FOR CONCRETE BEAMS OR OTHER CONCRETE  
STRUCTURES.

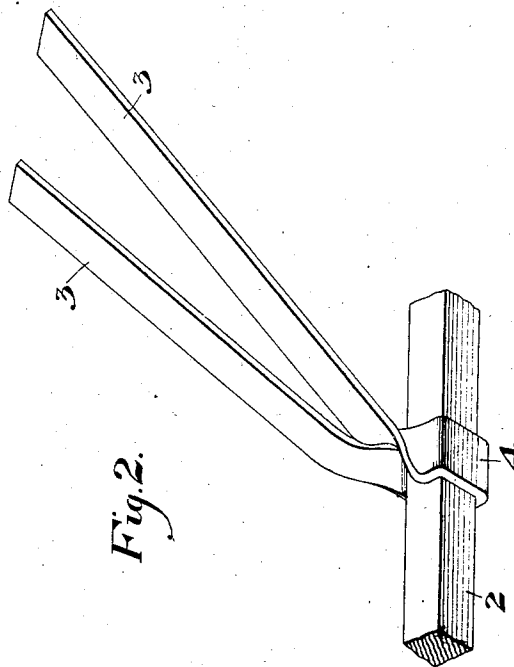
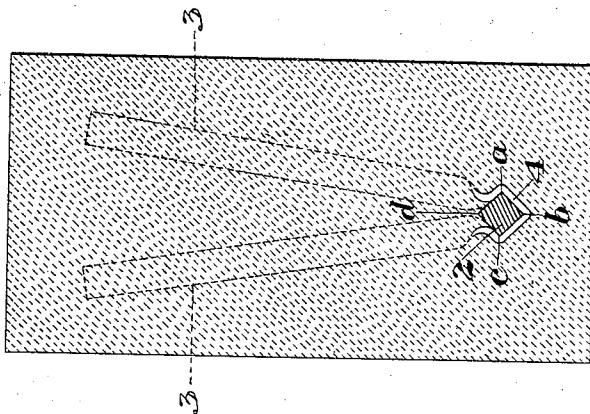
APPLICATION FILED NOV. 6, 1905.



WITNESSES

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*Fig. 3.*



INVENTOR

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# UNITED STATES PATENT OFFICE.

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NATIONAL FIRE PROOFING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

METAL REINFORCEMENT FOR CONCRETE BEAMS OR OTHER CONCRETE STRUCTURES.

No. 826,375.

Specification of Letters Patent.

Patented July 17, 1906.

Application filed November 6, 1905. Serial No. 285,957.

*To all whom it may concern:*

Be it known that I, JOSEPH SNOWBALL, of Pittsburgh, Allegheny county, Pennsylvania, have invented a new and useful Metal Reinforcement for Concrete Beams and other Concrete Structures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a metal reinforcement embodying my invention. Fig. 2 is a perspective view of one of the reinforcing members or stirrups; and Fig. 3 is a cross-section of a concrete beam, showing the reinforcement therein.

The invention is designed to provide a reinforcement for concrete beams and other concrete structures which can be readily and cheaply manufactured, in which the supplemental reinforcing members or stirrups carried by the longitudinal or tension member may be placed as thickly together as the stresses to which the structure is subject may require and may also be distributed in accordance with such stresses, and in which special securing or holding means for retaining the stirrups in place are not required.

With these objects in view my invention consists in a metal reinforcement composed of a longitudinal member of angular cross-section and a plurality of supplemental members adapted to be placed thereon and moved freely to any desired position and to remain in such position by reason of the nature of their engagement with and bearing upon the bar without other retaining or holding means.

My invention also consists in the novel construction of the supplemental members or stirrups hereinafter particularly described, and pointed out in the claims.

In the drawings, 2 is the longitudinal member, comprising a bar of angular cross-section, preferably rectangular. 3 designates the supplemental members or stirrups. Each of these is formed from an integral piece of metal bent and doubled upon itself, with its intermediate portion formed into an eye or loop 4, corresponding in angular shape to the cross-section of the bar 2, on which it is arranged to slide. Where the two arms of the stirrup leave the eye or loop 4, they are given

a quarter-twist and are also bent obliquely to the eye or loop, usually to an angle of approximately forty-five degrees. The two arms are also preferably made to diverge from each other somewhat, as shown.

In assembling the device the bar 2 is turned cornerwise, so that its faces form inclined planes and its angles *a*, *b*, and *c* are presented to the corresponding angles of the eyes or loops 4, while its angle *d* projects between the diverging arms of the stirrups, where those arms leave said eye and at the point where they are twisted, in the manner described. The stirrups may be moved freely on the bar as they are strung thereon; but by reason of their described engagement therewith it will be readily seen that they grasp or bite it, particularly when subjected to stresses, in such a manner that they are retained in the positions to which they are set without auxiliary holding or retaining means. They can therefore be quickly placed upon the bar and may be distributed equally or unequally thereon and as closely together as the nature of the structure and its load may determine.

5, Fig. 3, designates a concrete beam or other concrete structure in which the reinforcement is embedded in use, with the members 3 extending into the area of compression in position to receive compression and shearing stresses.

The advantages of my invention result from the facility with which the supplemental reinforcing members may be placed and distributed upon the longitudinal member and from the comparative cheapness with which the parts can be manufactured.

The cross-sectional form of the bar 2 may be changed, with corresponding changes in the members 3, without departing from my invention, since

What I claim is—

1. A metal reinforcement for concrete structures, comprising a longitudinal member, and supplemental members strung upon the longitudinal member and consisting each of two divergent load-carrying arms inclined to the axis of the longitudinal member in the direction of the length thereof, and united by an integral eye or loop which has a bearing upon both the upper and the lower surfaces of the said bar; substantially as described

2. A metal reinforcement for concrete structures, comprising a longitudinal member of angular cross-section, and supplemental members consisting each of an integral flat metal piece bent upon itself to form a substantially closed angular eye or loop with divergent arms extending obliquely therefrom in the direction of the length of the longitudinal member, the eye or loop having a bearing upon both the upper and the lower surfaces of said member, said longitudinal member having unobstructed surfaces whereby the supplemental members may be moved freely thereon when not loaded; substantially as described.

3. A reinforcing member, consisting of a piece of flat metal bent upon itself to form an

intermediate loop or eye, with obliquely-extending arms joined to the loop or eye by twists or turned portions which change the edgewise plane of the arms; substantially as described.

4. A metal reinforcement, comprising an integral piece of metal bent to form a central angular loop or eye, with divergent arms inclined to the plane thereof, and joined thereto by twists or turns which change the planes of the said arms; substantially as described.

In testimony whereof I have hereunto set my hand.

JOSEPH SNOWBALL

Witnesses:

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GEO. B. BLEMING.